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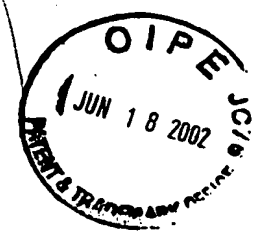

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Satoshi HOSHINO — Appeal No. _____

Serial No. 09/252,034 — GROUP 2623

Filed February 18, 1999 — Examiner S. Ahmed

DEVICE FOR DETECTING A FINGERPRINT, ELECTRIC APPARATUS AND DOORKEEPER APPARATUS

APPEAL BRIEF

MAY IT PLEASE YOUR HONORS:

1. Real Party in Interest

The real party in interest in this appeal is the current assignee, NEC Corporation of Tokyo, Japan.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 8-25 remain in the application and are the subject of the present appeal.

4. Status of Amendments

An Appeal Brief was filed in this application on July 19, 2001. The Official Action of October 10, 2001 reopened prosecution of the application. The amendment filed on

December 21, 2001 was entered, although the new Figure 7 added by that amendment was not approved.

The claims on appeal are as set forth in the Appendix.

5. Summary of Invention

The present invention is directed to a device for detecting a fingerprint (page 1, first paragraph). The conventional fingerprint detection device includes a fingerprint input section that is depressed by a fingertip of a finger whose print is to be detected. One of the problems with prior art fingerprint detection devices is that pressure exerted by the finger on the input section is often insufficient or is too high to detect a fingerprint (page 2, middle paragraph). There was no way to calibrate the amount of pressure a person applied to the fingerprint sensor. As is apparent to those of skill in the art, the print will smear if the pressure exerted by the finger is too high and the print is vague and incomplete if the pressure is too low. An object of the present invention is to reduce the variation of pressure applied to a contact surface of a fingerprint input section (page 2, last paragraph), to provide a device that self-calibrates the pressure.

Figures 1 and 2 show the sequence of event that occur when a finger contact surface 6 moves down within a deformable holder 10 under the urging of downward pressure applied to the contact surface. When the contact surface 6 is depressed to a predetermined position by application of sufficient pressure, a projection 6b of the conductive frame 6a fits into recessed portion 10a of the holder 10 and a switch 9 can turn ON to operate the fingerprint detection apparatus (page 7, lines 6-25). The force of spring 7 is set so that when the contact surface is in this detent position the pressure on the contact surface is suitable for detecting a fingerprint (page 7, lines 18-22). That is, a finger must press down on the contact surface with a suitable pressure to hold the contact surface in the detent position. When the finger is removed from the contact surface, the contact surface is urged out of the detent position and upwards by the spring 7 (page 6, lines 9-14).

The arrangement of the holder 10, recess 10a, and projection 6b constitute a lock mechanism 8 (Figure 1). As explained at page 9, second paragraph, the lock mechanism 8 provides a click impression or feeling of engagement to inform the user whether the pressure on contact surface 6 is correct, thereby providing a self-calibrating function. The

user pushes on contact surface 6 until the click impression is felt. The click impression prevents the user from applying too little or too much pressure to contact surface 6 (page 9, last two lines of second paragraph) and thereby helps the user calibrate the amount of pressure the user applies to the contact surface to achieve one of the objects of the present invention, namely reducing the variation of pressure on the contact surface when the fingerprint image is to be taken (page 2, last paragraph).

As shown in Figure 2, the holder 10 extends below the projection 6b when the projection 6b is in the detent position (the position where the click impression is felt). Further, one of skill in the art will recognize from Figure 2 that there is room for the contact surface to move below the detent position because springs 7 are not fully compressed and the support surface for the springs 7 is below both the switch 9 and the bottom of the contact surface when the projection 6b is in the detent position.

With reference again to Figure 1 and with specific reference to claim 20 in the Appendix, the device includes a moving element 7 opposing downward movement of contact surface 6 when contact surface 6 is pressed downward by a fingertip whose fingerprint is to be detected, and a

restraint 10 that has a detent position 10a at a depressed location of contact surface 6 and that urges contact surface 6 to remain in the detent position 10a when a first pressure is applied to contact surface 6 by a fingertip and that permits movement of contact surface 6 below detent position 10a when pressure on the contact surface exceeds the first pressure and above detent position 10a when pressure on the contact surface is less than the first pressure (page 9, second paragraph). The device also includes a detecting unit 11 detecting a fingerprint on the contact surface only when the contact surface is in the detent position.

6. Issues

Whether claims 8-25 and new Figure 7 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the applicant, at the time the application was filed, had possession of the claimed invention, under §112, first paragraph.

Whether the subject matter of independent claim 20 and dependent claim 23 would have been obvious under 35 U.S.C. §103 to one of skill in the art at the time of the present

invention over YASAKU (Japanese Patent 63-5551) in view of FILIP 4,025,748.

7. Grouping of Claims

The claims do not stand or fall together. Independent claim 20 and claims 8-19 and 21-22 dependent therefrom stand or fall together. Claim 23, which depends from claim 20, and claims 24-25, which depend from claim 23, stand or fall together.

8. Argument

Rejection under §112, first paragraph.

The Examiner states that the specification does not disclose a restraint that urges the contact surface to remain in the detent position when a first pressure is applied to the contact surface by a fingertip and that permits movement below the detent position when pressure on the contact surface is greater than the first pressure and above the detent position when pressure on the contact surface is less than the first pressure.

Applicant respectfully disagrees.

When one of skill in the art considers the sequence of events shown in Figures 1 and 2, the extension of the holder

10 below the detent position, and the room for further movement of the contact surface 6 below the detent position, applicant contends that one of skill in the art would find it apparent that the contact surface must be able to move below the detent position in order to achieve the goal of reducing pressure variation. Indeed, if the contact surface could not move below the detent position, the device would not achieve this goal because the user could apply too much pressure with impunity. There would be no way to prevent the application of too much pressure (bearing in mind that page 9, lines 21-24 state that the click impression prevents both insufficient and surplus pressure). Why else does the applicant show in Figure 2 that holder 10 extends below the projection 6b when the projection 6b is in the detent position and that there is room for the contact surface to move below the detent position? If the contact surface 6 were not to move below the detent position, why not simply place a stop to prevent further movement (e.g., bending the holder into an L-shape at the detent position or providing a floor). The applicant shows that extension of the holder and the room for further movement because the contact surface does move below the detent position.

Accordingly, applicant contends that one of skill in the art would find new Figure 7 to be the logical third step in the sequence shown in Figures 1 and 2, and that in view of this, one of skill in the art would find that the specification does describe the invention defined in the claims in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention as required by 35 U.S.C. §112, first paragraph.

The second paragraph on page 9, when read in the context of the entire application, is informative. This paragraph is repeated for ease of reference: "On the other hand, a click impression or a feeling of engagement from the lock mechanism 8 can inform the user whether the pressure of the fingertip is sufficient or not. In other words, a user can adjust the pushing power of the fingertip until the click impression is obtained. Until the click impression is obtained, the user continues to push the contact surface 6 and may increase the pressure. Thus, the click impression notifies the user of the unnecessity of pushing the contact surface 6 any more. Therefore, the click impression prevents insufficient and surplus pressure of the fingertip."

The Examiner, in his Official Action of March 4, 2002 (page 4, line 3), misinterprets this paragraph. He states that the user stops pushing when the click impression is felt. This is not correct. The user must continue to apply pressure to the contact surface in order to make a suitable fingerprint impression. If the user stopped pushing, the contact surface would rise (page 6, lines 11-12) and there would be no fingerprint impression to be made. The above-quoted paragraph states the user does not have to push the contact surface "any more," meaning that there is no need to increase the pressure. Of course, applicant contends that if the user does increase the pressure the contact surface will go below the detent.

The Examiner also states (Official Action of March 4, 2002, page 4, paragraph A) that this paragraph is not concerned with avoiding a click impression when the pressure is too high. However, this paragraph states that "the click impression prevents insufficient and surplus pressure of the fingertip" and thus the paragraph is clearly directed to the situation when the pressure is too high ("surplus").

The Examiner notes that this paragraph does not disclose how to "override" the lock mechanism to move the contact surface below the detent position. The Examiner's

use of "override" incorrectly implies that the contact surface is fixed in the detent position and cannot be moved, except upwards. The contact surface is not fixed in the detent position because when the contact surface is in the detent position it still must react to the pressure applied by the finger so that it can "prevent insufficient and surplus pressure" (page 9, line 23). Further, the applicant discloses that the contact surface moves up when the finger is lifted. That is, the detent position does not hold the contact surface in the detent position and the surface is allowed to move freely upward when the finger is lifted. Since the construction of the holder 10 is symmetrical with respect to up and down movement, one of skill in the art will recognize that the detent position acts the same when the contact surface is moving up and down. Nothing is "overridden" when the surface moves up, and thus there is nothing to "override" when the surface moves down.

The use of the term "lock" in the application does not imply a fixing of position. One of skill in the art reading the entire application will recognize that the "lock" is a guide that provides a self-calibrating feature for finger pressure on the contact surface.

By way of further explanation, one of the objects of the invention is to reduce pressure variation on the contact surface. To this end, the device must provide consequences when the pressure is too low and too high. If the downward pressure is too low, the contact surface will move up, breaking contact with the switch. If the downward pressure is too high, the contact surface will move down, breaking contact with the switch. If the device has no consequences for application of too much pressure, the pressure would not be uniform; that is, the pressure could vary so long as it is above the pressure needed to push the contact surface into the predetermined position. Upon reading the specification in its entirety, including the second paragraph on page 9, one of skill in the art will recognize that the user must adjust fingertip pressure to hold the click impression to avoid turning OFF switch 9 and that too much pressure and too little pressure will avoid the click impression and turn OFF switch 9.

Accordingly, for the reasons given above, the contact surface must move below the detent 10a when pressure on the contact surface is greater than the desired (first) pressure. The specification describes the subject matter of claim 20 in such a way as to reasonably convey to one

skilled in the art that the inventor had possession of the claimed invention at the time the application was filed.

Rejection Under §103.

The rejection under §103 is based on the Examiner's interpretation of what the applicant discloses and ignores the limitation that the contact surface moves below the detent position. When this limitation is properly considered, the rejection must fall.

Claim 20 is directed to an embodiment of the present invention that includes a restraint that has a detent position at a depressed location of the contact surface and that urges the contact surface to remain in the detent position when a first pressure is applied to the contact surface by a fingertip and permitting movement of the contact surface below the detent position when pressure on the contact surface is greater than the first pressure and above the detent position only when pressure on the contact surface is less than the first pressure.

YASAKU discloses a device that includes a switch 4 that makes a fingerprint detection when sufficient pressure is applied to the detector 1 by a finger to make contact between movable and fixed portions 12 and 13. However, the

device continues to make a detection when too much pressure is applied to the detector 1. There is no provision in YASAKU for breaking contact when "surplus" pressure is applied to the detector 1. As noted in the Official Action of October 10, 2001 (page 5), the detector 1 can move below a position at which contact is made when too much pressure is applied. This appears to be correct, but not relevant since the claim requires that the detecting unit detect a fingerprint only when the contact surface is in the detent position and that the contact surface moves below (out of) the detent position when too much pressure is applied.

The Examiner does not point to any other reference for a suggestion to move the contact surface below the detent position when too much pressure is applied and to make the fingerprint detection only when the contact surface is in the detent position. Accordingly, the claims avoid the rejections of record.

The Examiner acknowledges that YASAKU does not disclose the restraint having a detent position at a depressed location and urging the contact surface to remain in the detent position when a first pressure is applied to the contact surface, and attempts to rely on FILIP for this feature. The switch in FILIP is for "snowmobiles,

motorcycles, lawnmowers, etc.," all machines made for rough treatment in the outdoors where the most likely source of application pressure is a heavy-handed thumb or finger pushed as hard as possible. One of skill in the art of fingerprint detection, especially the art of ensuring consistency of the application pressure, would not turn to such a roughly operated device for a suggestion about switch pressure in the delicate matter of obtaining a fingerprint. Further, FILIP states that the switch will remain locked in a position when pressed (column 1, lines 18-22). This is opposite the device in claim 20, in which the user can apply too much pressure and override the urging of the restraint.

The Examiner indicates that one of skill in the art would replace YASAKU's switch with FILIP's switch because FILIP's switch has a simple mechanism. Simple, yes; but one of skill in the art would recognize its ineffectiveness for obtaining a fingerprint. A switch for obtaining fingerprints must be sensitive to both over and under pressure. FILIP's switch is not sensitive to overpressure and thus is ineffective to prevent overpressure.

The Examiner also indicates that the motivation to combine these references is to prevent deviation of the pressure applied by the fingertip onto the contact surface.

However, as noted above, FILIP does not do this at all. The user can apply any pressure and the switch will remain locked. Further, there is nothing in FILIP to suggest to the artisan that the switch could be used for such a purpose. There is no art of record that indicates why these references should be combined. The Official Action offers a reason that is not supported by any art of record, and which appears to be drawn impermissibly from the applicant alone.

Claim 23 is directed to a further embodiment in which the restraint is a spring member with a recess that defines the detent position. As noted above, neither reference discloses the detent. In addition, neither reference discloses that the restraint is a spring member with a recess. The Examiner indicates that FILIP disclose a spring 45 that engages a small cavity 47. This is true, but this is not what the claim defines. The claim provides that the spring member has a recess, not that the spring member engages a recess. Since neither reference discloses a spring member with a recess as defined in 23, the subject matter of claim 23 would not be obvious to one of skill in the art.

In view of this, it is believed that the rejection of record cannot be sustained and that the same must be reversed, and such is respectfully requested.

Respectfully submitted,

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9. Appendix

The claims on appeal:

8. A device as claimed in claim 20, comprising:

a memory for storing a sequence of fingerprint data signals, which is detected from a fingertip; and

means for comparing a fingerprint of the fingertip placed currently on said contact surface with the fingerprint data signal sequence stored in said memory.

9. A device as claimed in claim 20, wherein said detecting unit comprises a solid-state image sensor for scanning a fingerprint image into a sequence of data signals.

10. A device as claimed in claim 20, wherein said detecting unit comprises:

a converting circuit to convert a variable pressure from the fingertip into a variable electric resistance; and

a measuring circuit to measure said variable electric resistance.

11. A device for detecting a fingerprint as claimed in claim 20, wherein said detecting unit comprises:

a converting circuit to convert a variable pressure from the fingertip into a variable capacitance;

a measuring circuit to measure said variable capacitance.

12. An electric apparatus which executes a predetermined operation and which includes the device claimed in claim 8, wherein said electric apparatus is powered when the fingerprint data signal sequence of the fingertip placed currently on said contact surface is stored in said memory.

13. An electric apparatus as claimed in claim 12, wherein the device is operable as a power switch.

14. An electric apparatus which executes a predetermined operation and which includes the device claimed in claim 8, wherein said electric apparatus is powered when the fingertip placed currently on said contact surface is coincident with the fingerprint data signal sequence stored in said memory.

15. An electric apparatus as claimed in claim 14, wherein the device is operable as a power switch.

16. A doorkeeper apparatus which controls a door lock mechanism and which includes the device claimed in claim 8, wherein said doorkeeper apparatus opens a door when the fingerprint data signal sequence of the fingertip placed currently on said contact surface is stored in said memory.

17. A doorkeeper apparatus as claimed in claim 16, wherein the device is operable as a doorbell switch.

18. A doorkeeper apparatus which controls a door lock mechanism and which includes the device clamed in claim 8, wherein said doorkeeper apparatus opens a door when the fingertip placed currently on said contact surface is coincident with the fingerprint data signal sequence stored in said memory.

19. A doorkeeper apparatus as claimed in claim 18, wherein the device is operable as a doorbell switch.

20. A device for detecting a fingerprint of a fingertip placed on a contact surface that moves up and down and is part of a fingerprint input section, the device comprising:

a moving element opposing downward movement of the contact surface when the contact surface is pressed downward by a fingertip whose fingerprint is to be detected;

a restraint having a detent position at a depressed location of the contact surface and urging the contact surface to remain in the detent position when a first pressure is applied to the contact surface by a fingertip and permitting movement of the contact surface below the detent position when pressure on the contact surface is greater than the first pressure and above the detent position when pressure on the contact surface is less than the first pressure; and

a detecting unit detecting a fingerprint on the contact surface only when the contact surface is in the detent position.

21. The device of claim 20, further comprising a switch at the detent position that activates said detector when the contact surface is in the detent position.

22. The device of claim 21, wherein the contact surface comprises a projection that contacts said switch when the contact surface is in the detent position.

23. The device of claim 20, wherein said restraint comprises a spring member with a recess that defines the detent position.

24. The device of claim 23, wherein the contact surface comprises a projection that fits into said recess when the contact surface is in the detent position.

25. The device of claim 24, wherein said spring member comprises a leaf spring that is urged radially outward by said projection when said projection is not in said recess.